

Amendments to the Claims:

The following claims will replace all prior versions of the claims in this application (in the unlikely event that no claims follow herein, the previously pending claims will remain):

1. (Currently Amended) A heat-curable epoxy resin composition comprising an epoxy resin and an oligomeric and/or polymeric impact modifier;

wherein:

(a) the impact modifier is a polyester, which is a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and polyamide, or a polyurethane formed from a polyester; polyester, wherein

(b) the impact modifier comprises a residue of at least one dimer fatty acid and/or dimer fatty diol; wherein the polyester consists essentially of:

(c) when the impact modifier is a polyester, the polyol component of said polyester consists of residues derived from:

- i) ~~polyol residues derived from polyols having a molecular weight of between 50 and 200; and/or~~
- ii) ~~dimer diol residues derived from dimer fatty diols; and~~

wherein

(d) the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier.

2. (Currently Amended) A cured epoxy resin composition comprising a reaction product of an epoxy resin and an oligomeric and/or polymeric impact modifier;

wherein:

(a) the impact modifier is a polyester, which is a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and polyamide, or a polyurethane formed from a polyester; polyester, wherein

(b) the impact modifier comprises a residue of at least one dimer fatty acid and/or dimer fatty diol; wherein the polyester consists essentially of:

(c) when the impact modifier is a polyester, the polyol component of said polyester consists of residues derived from:

- i) ~~polyol residues derived from~~ polyols having a molecular weight of between 50 and 200; and/or
- ii) ~~dimer diol residues derived from~~ dimer fatty diols; and

wherein

(d) the cured resin composition comprises phase-separated domains and/or particles comprising the impact modifier.

3-4. (Cancelled).

5. (Currently Amended) The A-composition according to of claim 31, 34 wherein the polyester is formed from dimer fatty acids, adipic acid, and at least one diol having a molecular weight in the range from 50 to 200.

6. (Currently Amended) The A-composition according to of claim 1, 4 wherein the impact modifier comprises polyamide.

7. (Currently Amended) The A-composition according to of claim 31, 34 wherein the impact modifier comprises in the range from 15 to 50% by weight of dimer fatty acid and/or dimer fatty diol residues.

8. (Currently Amended) The A-composition according to of claim 31, 34 wherein the weight ratio of epoxy resin:impact modifier is in the range from 1.5 to 10:1.

9. (Currently Amended) The A-composition according to of claim 31, 34 comprising in the range from 10 to 50% by weight of impact modifier.

10. (Currently Amended) The A-composition according to of claim 31, 34 comprising in the range from 4 to 20% by weight of dimer fatty acid and/or dimer fatty diol residues.

11. (Currently Amended) The A-composition according to of claim 31, 34 comprising a reaction product of an epoxy resin and a prepolymer wherein the

prepolymer comprises the reaction product of an epoxy resin and the oligomeric and/or polymeric impact modifier.

12. (Currently Amended) The A-composition according to of claim 11, 11 wherein the prepolymer comprises in the range from 20 to 60% by weight of impact modifier.

13. (Cancelled).

14. (Currently Amended) The A-composition according to of claim 33, 33 wherein the domains and/or particles have a mean particle diameter in the range from 0.4 to 7 μm .

15. (Currently Amended) The A-composition according to of claim 33, 33 wherein the domains and/or particles have a mean aspect ratio in the range from 0.6 to 1.4:1.

16. (Currently Amended) The A-composition according to of claim 33, 33 wherein less than 25% by number of domains and/or particles have a particle diameter of less than 0.5 μm .

17. (Currently Amended) The A-composition according to of claim 33, 33 wherein less than 20% by number of domains and/or particles have a particle diameter of greater than 5 μm .

18. (Currently Amended) The A-composition according to of claim 33, 33 wherein the interfacial work of adhesion, G_a is greater than 70 Jm^{-2} .

19. (Currently Amended) The A-composition according to of claim 33, 33 wherein the essential work of fracture is in the range from 12 to 18 kJm^{-2} .

20. (Currently Amended) A prepolymer comprising a reaction product of an epoxy resin and an oligomeric and/or polymeric impact modifier, wherein the impact modifier is a polyester comprising from 15 to 50% by weight of a residue of at least one dimer fatty acid and/or dimer fatty diol, wherein ~~said polyester consists~~

~~essentially of: the polyol component of said polyester consists of residues derived from:~~

- ~~i) polyol residues derived from polyols having a molecular weight of between 50 and 200; and/or~~
- ~~ii) dimer diol residues derived from dimer fatty diols; and~~

wherein said prepolymer comprises in the range from 40 to 80% by weight of the epoxy resin and 20 to 60% by weight of the impact modifier.

21. (Previously Presented) A cured epoxy resin composition according to claim 33 comprising phase-separated domains and/or particles comprising impact modifier, said domains and/or particles having an aspect ratio in the range from 0.7 to 1.3:1, and a mean particle diameter in the range from 0.8 to 5 μm .

22. (Currently Amended) The A-composition according to of claim 21, 24 wherein at least 60% by number of the domains and/or particles have a particle diameter in the range from 0.8 to 5 μm .

23. (Currently Amended) The A-composition according to of claim 21, 24 wherein less than 25% by number of domains and/or particles have a particle diameter of less than 0.5 μm .

24. (Currently Amended) The A-composition according to of claim 21, 24 wherein less than 20% by number of domains and/or particles have a particle diameter of greater than 5 μm .

25. (Cancelled).

26. (Previously Presented) A heat-curable electronic assembly adhesive composition comprising the heat-curable epoxy resin composition according to claim 31.

27. (Previously Presented) A circuit board comprising a chip or die bonded by the cured epoxy resin composition according to claim 33.

28. (Currently Amended) A method of forming a heat-curable epoxy resin composition comprising the heat-curable epoxy resin composition according to claim 31, ~~which~~ wherein the method comprises:

- (i) reacting the impact modifier with a first epoxy resin to form a prepolymer, and
- (ii) mixing the prepolymer with a second epoxy resin.

29. (Currently Amended) ~~The A-method according to~~ of claim ~~28, 28~~ wherein the molecular weight of the first epoxy resin is less than the molecular weight of the second epoxy resin.

30. (Previously Presented) A method of assembling components, comprising:

- a) interposing a heat-curable epoxy resin adhesive composition between respective surfaces of the components; and
- b) curing said composition with the components in contact therewith, said adhesive composition comprising the heat-curable epoxy resin composition according to claim 31.

31. (Currently Amended) A heat-curable epoxy resin composition, comprising:

- a) an epoxy resin, and
- b) an oligomeric and/or polymeric impact modifier which is a polyester comprising a residue of at least one dimer fatty acid and/or dimer fatty diol, wherein the polyol component of said polyester consists of ~~comprises~~ polyol residues derived ~~from:~~ from

i) polyols having a molecular weight of between 50 and 200-200;
and/or

ii) ~~dimer diol residues derived from dimer fatty diols; and diols,~~

wherein the composition is capable of phase separation, upon curing, to form phase-separated domains and/or particles comprising the impact modifier.

32. (Cancelled).

33. (Currently Amended) A cured epoxy resin composition comprising a reaction product of:

- a) an epoxy resin; and
- b) an oligomeric and/or polymeric impact modifier which is a polyester comprising a residue of at least one dimer fatty acid and/or dimer fatty diol, wherein the polyol component of said polyester consists of comprises ~~polyol~~ residues derived from: ~~from~~

i) polyols having a molecular weight of between 50 and ~~200~~ 200;

and/or

ii) dimer diol residues derived from dimer fatty diols; and diols,

wherein said composition comprises phase-separated domains and/or particles comprising the impact modifier.

34. (Cancelled).

35. (Currently Amended) The A-heat-curable epoxy resin of claim 31, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of pentaerythritol, glycerol, trimethylolpropane, ethylene glycol, diethylene glycol, 1,3-propylene glycol, dipropylene glycol, 1,4-butylene glycol, 1,6-hexylene glycol, neopentyl glycol, 3-methyl pentane glycol, 1,2-propylene glycol, 1,4-bis(hydroxymethyl)cyclohexane, (1,4-cyclohexane-dimethanol) and dimer fatty diols.

36. (Previously Presented) The composition of claim 35, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of ethylene glycol, diethylene glycol, 1,4-butylene glycol, 1,6-hexylene glycol, neopentyl glycol and dimer fatty diols.

37. (Previously Presented) The composition of claim 35, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of 1,4-butylene glycol, 1,6-hexylene glycol and neopentyl glycol.

38. (Currently Amended) The A-cured epoxy resin composition of claim 33, 33 wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of pentaerythritol, glycerol, trimethylolpropane, ethylene glycol, diethylene glycol, 1,3-propylene glycol, dipropylene glycol, 1,4-butylene glycol, 1,6-hexylene glycol, neopentyl glycol, 3-methyl pentane glycol, 1,2-propylene glycol, 1,4-bis(hydroxymethyl)cyclohexane, (1,4-cyclohexane-dimethanol) and dimer fatty diols.

39. (Previously Presented) The composition of claim 38, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of ethylene glycol, diethylene glycol, 1,4-butylene glycol, 1,6-hexylene glycol, neopentyl glycol and dimer fatty diols.

40. (Previously Presented) The composition of claim 38, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of 1,4-butylene glycol, 1,6-hexylene glycol and neopentyl glycol.

41-44. (Cancelled).

45. (Previously Presented) A heat-curable epoxy resin composition comprising an epoxy resin and an oligomeric and/or polymeric impact modifier, wherein the impact modifier comprises a residue of dimer fatty acids and non-dimer fatty acids wherein the ratio of dimer fatty acids to non-dimer fatty acids is in the range from 30 to 70%:30 to 70% by weight of the total dicarboxylic acids, and wherein the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier.

46. (Currently Amended) A heat-curable epoxy resin composition comprising an epoxy resin and an oligomeric and/or polymeric impact modifier, wherein the impact modifier is a polyester, and wherein said polyester comprises:

- i) polyol residues selected from the group consisting ~~essentially of~~ pentaerythritol, glycerol, trimethylolpropane, ethylene glycol, diethylene glycol, 1,3-propylene glycol, dipropylene glycol, 1,4-butylene glycol, 1,6-hexylene

glycol, neopentyl glycol, 3-methyl pentane glycol, 1,2-propylene glycol, 1,4-bis(hydroxymethyl)cyclohexane, and (1,4-cyclohexane-dimethanol); and/or
ii) dimer fatty diols; and

wherein the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier.

47. (Currently Amended) The A-composition according to ~~of~~ claim 1, 1 wherein the impact modifier comprises polyamide or polyurethane.

48. (Currently Amended) The A-composition according to ~~of~~ claim 2, 2 wherein the impact modifier comprises polyamide or polyurethane.

49. (Currently Amended) The A-composition according to ~~of~~ claim 45, 45 wherein the impact modifier is formed from dimer fatty acids, adipic acid, and at least one diol having a molecular weight in the range from 50 to 200.

50. (Previously Presented) The composition of claim 49, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of 1,4-butylene glycol, 1,6-hexylene glycol and neopentyl glycol.

51. (Currently Amended) The A-composition according to ~~of~~ claim 46, 46 wherein the polyester is formed from dimer fatty acids and adipic acid.

52. (Previously Presented) The composition of claim 51, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of 1,4-butylene glycol, 1,6-hexylene glycol and neopentyl glycol.

53. (Currently Amended) The A-composition according to ~~of~~ claim 1, 1 wherein the impact modifier comprises a copolymer formed from a polyester and polyamide or a polyurethane formed from a polyester.

54. (Currently Amended) The A-composition ~~according to~~ of claim 2, 2-wherein the impact modifier comprises a copolymer formed from a polyester and polyamide or a polyurethane formed from a polyester.

55-56. (Cancelled).